भारतीय मानक
Indian Standard

IS 17019 : 2018

मोटर साइकिल / स्कूटर / मोपेड हेतु गिअर / गिरोटर ऑयल पम्प — विशिष्टि

Gear / Gerotor Oil Pump for Motorcycle / Scooter / Moped — Specification

ICS 43.140

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

August 2018 **Price Group 2**

Automotive Prime Movers, Transmission System and Internal Combustion Engine Sectional Committee, TED 02

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, on recommendations of the Automotive Prime Movers, Transmission System and Internal Combustion Engine Sectional Committee and approval of the Transport Engineering Division Council.

The formulation of this standard was taken up after request was received from the Department of Heavy Industry, Government of India.

Lubricating pump is an important component in engine lubrication oil system. It keeps the whole system in good working condition. The internal cycloidal gear pump is one kind of oil pump which consists of pump body, pump covers and rotors and other sub-parts.

In this standard no dimensions has been specified to ensure oil pumps of different sizes being used with different models of vehicles can follow the standard.

In order to allow scope for development and improvement, requirements of material for the different components and their design detail have been left to the manufacturer.

The standard may not cover all the technical provisions relating to lubricating oil pump.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

GEAR / GEROTOR OIL PUMP FOR MOTORCYCLE / SCOOTERS / MOPEDS — SPECIFICATION

1 SCOPE

This standard covers the requirements of rotary positive displacement pump used for lubrication purposes in motorcycle, scooters and mopeds.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standard indicated below:

IS No.	*Title*
IS 2500 (Part 1) : 2000/ ISO 2859-1 : 1999	Sampling inspection procedures: Part 1 Attribute sampling plans indexed by acceptable quality limit (AQL) for lot-by-lot inspection (*third revision*)
IS 13656 : 2014	Internal combustion engine crankcase oils for automotive application (diesel and gasoline) — Specification (*second revision)*

3 DEFINITION

3.1 Rotary Positive Displacement Pump

A machine in which liquid is trapped in confined volumes and transported from an inlet port to an outlet port by rotational movement of the rotors.

4 NOMENCLATURE

The nomenclature used for different components of a lubricating pump has been given in Fig. 1.

NOTE — The parts and components shown are only symbolic. All parts or components may or may not be available in a model/type of oil pump.

5 DIMENSIONS

The dimension of pump and of its different components shall be as agreed to between the manufacturer and the purchaser.

6 GENERAL REQUIREMENTS AND CONSTRUCTION

6.1 The lubricating oil pump shall be of robust construction, incorporating the highest quality material and workmanship in accordance with best trade practices.

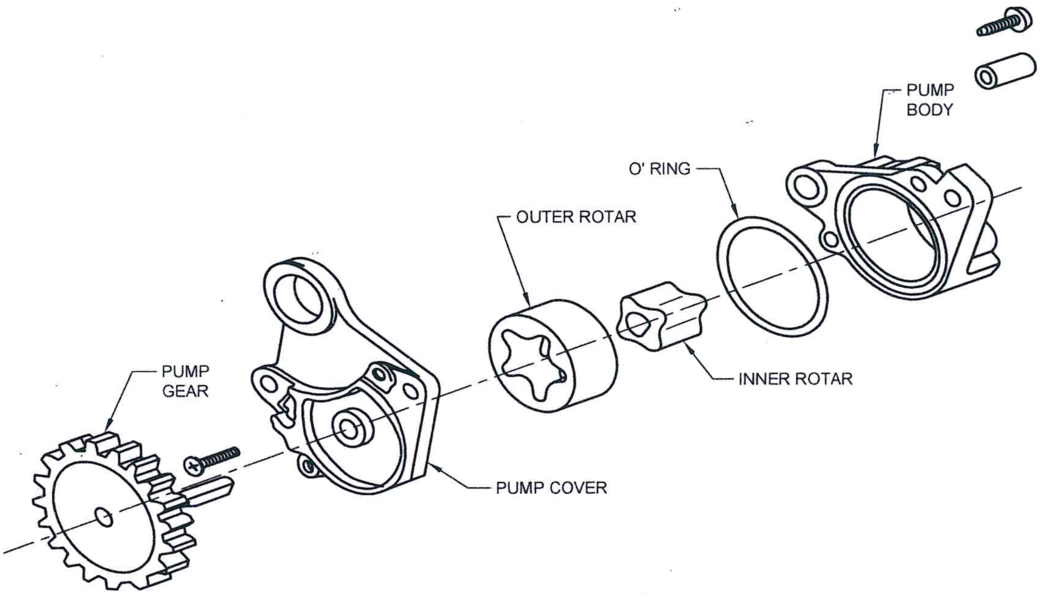

FIG. 1 LUBRICATING PUMP

6.2 The following material is recommended for different components:

a) Rotor : Steel, stainless steel, alloy steel, sintered alloy.

b) Cover/body : Cast iron, ductile iron, steel, stainless steel, aluminium alloys.

c) Gear : Plastic, steel, alloy steel

6.3 The hardness of inner and outer rotor shall not be less than 55 HRC. In case of sintered alloy the hardness shall not be less than 45 HRB.

6.4 It should be possible to dismantle and re-assemble the pump and its components in a convenient manner.

6.5 The driver rotor shall have at least one lobe less than the driven rotor.

6.6 The recommended clearance between the different components is given below. The values may differ based on flow or pressure requirements.

a) Inner rotor and outer rotor (standard tip clearance) — 0.05 to 0.15 mm;

b) Outer rotor and pump housing (standard body clearance) — 0.08 to 0.15 mm; and

c) Face of inner and outer rotor and oil pump (standard face or side clearance) — 0.05 to 0.15 mm.

7 TESTS

The manufacture shall declare the discharge and nominal working pressure at a given RPM.

7.1 Test Oil

Lubricating oil conforming to IS 13656, may be used. In addition to this oil recommended by pump manufacturer or test oil having equivalent viscosity at lower temperature as compared to viscosity of engine oil at higher temperature can also be used.

7.2 Working Pressure

The working pressure developed shall not vary from nominal pressure, declared by manufacturer, by more than ± 0.5 kg/cm^2.

7.3 Maximum Pressure

The maximum pressure developed shall not be more than 5 kg/cm^2.

7.4 Discharge

The discharge shall not vary from declared value (to be declared by manufacturer for a given RPM and pressure) by more than ± 10 percent.

The lubricating oil shall be at a temperature of 75 ± 5ºC at the start of the test.

7.5 Endurance Test

The lubricating oil pump shall be subjected to endurance test for 400 h *Min*. at the declared RPM and working pressure. No breakage or defect shall be noticed during or after the test. After the endurance test the pump shall be again tested for discharge test and it shall show no change in output.

8 PACKING

8.1 Each pump shall be filled and operated a few times with good preservative oil leaving a thin film of preservative.

8.2 The pump shall be packed in a cardboard box or in any other approved packing in accordance with best trade practices to ensure that there is no deterioration under reasonably good storage conditions.

9 MARKING

9.1 Each package/carton shall be labelled showing the following particulars:

a) Engine RPM;

b) Nominal pressure;

c) Oil output, in LPM; and

d) Indication of the source of manufacture.

9.2 BIS Certification Marking

The lubricating pump may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations made thereunder. The details of the conditions under which the licence for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

10 SAMPLING

10.1 Unless otherwise agreed to between the supplier and the purchaser, the procedure as given in IS 2500 (Part 1), shall be followed for sampling inspection. The inspection level and sampling plan for various characteristics as given in **10.1.1** to **10.1.3** shall be followed.

10.1.1 For the characteristics, dimensions, general requirements and construction the scale of sampling shall be corresponding to special inspection level S-4 given in Table 1 of IS 2500 (Part 1).

10.1.2 For the characteristics given in **10.1.1**, the sampling plan shall be corresponding to Acceptable Quality Level (AQL) value of 1.5 percent given in Table 2-A of IS 2500 (Part 1).

10.1.3 For tests the sampling plan to be followed shall be corresponding to Acceptable Quality Level (AQL) of 1.0 percent given in Table 2-A of IS 2500 (Part 1).

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Automotive Prime Movers, Transmission System and Internal Combustion Engine Sectional Committee, TED 02

Organization	*Representative(s)*
Automotive Research Association of India, Pune	Shri N. V. Marathe (***Chairman***)
Ashok Leyland Ltd, Chennai	Shri D. Balakrishnan Shri Ravi M. (*Alternate*)
Association of State Road Transport Undertakings, New Delhi	Shri S. K. Patra Shri R. Chandrababu (*Alternate*)
Automotive Research Association of India, Pune	Shri H. A. Nakhwa Shri P. G. Bhat (*Alternate*)
Automotive component Manufacture Association, New Delhi	Shri Uday Harite Ms. Seema Babal (*Alternate*)
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Bosch Limited, Bangalore	Shri M. R. Gopalakrishna
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Controllerate Quality Assurance, Chennai	Lt Col O. P. Bharti Shri M.Sankara Subramanian (*Alternate*)
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Indian Institute of Petroleum, Dehradun	Dr S. K. Singhal Shri Nishan Singh (*Alternate*)
Indian Institute of Technology (IIT), New Delhi	Dr S. P. Singh Dr Sudipto Mukherjee (*Alternate*)

Organization	*Representative(s)*
International Centre for Automotive Technology, Manesar	Shri Vaibhav Prasanth Yadav Ms Vijayanta Ahuja (*Alternate*)
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Tractor Manufacturers Association, New Delhi	Shri Madhav Bhade Shri Philip Koshy (*Alternate*)
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BIS Directorate General	Shri R. R. Singh, Sc-E. & Head (TED) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri Sharad Kumar,
Scientist ‘B’ (TED), BIS

Bureau of Indian Standards

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg CHANDIGARH 160019	265 0206 265 0290
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	2254 1216, 2254 1442 2254 2519, 2254 2315
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